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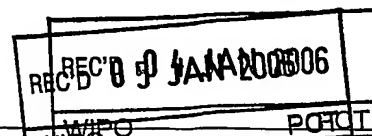
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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)




Applicant's or agent's file reference NO 7569/WO/PCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP2004/011556	International filing date (day/month/year) 14.10.2004	Priority date (day/month/year) 20.10.2003
International Patent Classification (IPC) or both national classification and IPC A23L1/234, A23F5/46, A23L1/226		
Applicant NESTEC S.A.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
 - ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 26.03.2005	Date of completion of this report 04.01.2006
Name and mailing address of the International preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Couzy, F Telephone No. +49 89 2399-7503



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP2004/011556

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17):*

Description, Pages

1-14 as originally filed

Claims, Numbers

1-10 received on 28.04.2005 with letter of 25.04.2005

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP2004/011556

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	1-5
	No: Claims	6-10
Inventive step (IS)	Yes: Claims	1-5
	No: Claims	6-10
Industrial applicability (IA)	Yes: Claims	1-11
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V.

1. The following documents are referred to in this communication:

- D1 : US 3 773 524 A (KATZ I,US ET AL) 20 November 1973
D2 : US 4 041 186 A (EVERS ET AL) 9 August 1977
D3 : GB 2 116 823 A (* GENERAL FOODS CORPORATION) 5 October 1983
D4 : HOFMANN T ET AL: "Identification of potent aroma compounds in thermally treated mixtures of glucose/cysteine and rhamnose/cysteine using aroma extract dilution techniques" JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY, AMERICAN CHEMICAL SOCIETY. WASHINGTON, US, vol. 45, no. 3, March 1997, pages 898-906, XP002160151 ISSN: 0021-8561
D5 : SANZ C, CZERNY M, CID C, SCHIEBERLE P: "Comparison of potent odorants in a filtered coffee brew and in an instant coffee beverage by aroma extract dilution analysis (AEDA)" EUR. FOOD RES. TECHNOL., vol. 214, 2002, pages 299-302, XP002316148
D6 : KUMAZAWA K ET AL: "Investigation of the change in the flavor of a coffee drink during heat processing" BIOSIS, April 2003, XP002273781
D7 : HOLSCHER W ET AL: "New sulfur-containing aroma-impact compounds in roasted coffee" FSTA, 1992, XP002273782

2. Novelty and inventive step

2.1 Use claims 1-5

None of the prior art documents discloses nor suggests the use of a straight chain C4-C5 mercapto-alkanone for increasing the organoleptic properties of a **coffee** flavor provided to a food or beverage. The closest prior art to these claims may be considered to be D1-D3, which disclose the use of such compounds for providing either meat flavor (D1, D3) or a muscat flavor (D2). Furthermore, according to D5 the existence of straight chain C4-C5 mercapto-alkanones in coffee flavor was not previously known, thus the claimed use could not be envisaged. Thus, the subject-matter of claims 1-6 is both novel and involves an inventive step (Art. 33 (2-3) PCT).

2.2 Method claim 6

According to the description on p.4, straight chain C5-C5 mercapto alkanones are present

in coffee flavour. Thus, the claimed method is anticipated by the addition of a coffee flavour to any food or beverage and is obviously not new (Art. 33 (2) PCT).

2.3 Product claims 7-10

Straight chain C4-C5 mercapto-alkanones have been used to provide flavours other than coffee to food products and beverages, with specific disclosures for 2-mercapto-3-pentanone (D1) and 4-mercapto-2-pentanone (D2, D3). Example IV of D1 is a liquid composition which comprises both 2-mercapto-3-butanone and 2-mercapto-3-pentanone. Thus, it anticipates the subject-matter of claims 7, 8, and 10. As for claim 9, it is pointed out that according to D5 methional is a compound present in coffee aroma. Since this is also true for the two other compounds required by that claim, any food or beverage comprising coffee aroma should be considered to anticipate the subject-matter of said claim 9 (and of course of claims 7-8 and 10 also). Further, it may also only appear to be an obvious option for the skilled person starting from D1, which also suggests using co-flavorants (see col.2 li.16-18). Thus, the subject-matter of claims 7-10 is not new (Art. 33 (2) PCT).

3. The subject-matter of all claims is industrially applicable in the sense of Art. 33 (4) PCT.

THE CLAIMS

What is claimed is:

1. Use of an aroma-providing substance in an amount sufficient to increase the organoleptic properties of a coffee flavor provided in a food or beverage, characterized in that the aroma-providing substance is a straight chain C₄ -C₅ mercapto-alkanone or a mixture of two or more thereof.
2. Use according to claim 1, characterized in that the aroma-providing substance is 3-mercapto-2-butanone, 2-mercapto-3-pentanone, 3-mercapto-2-pentanone or a mixture of two or more thereof.
3. Use according to claim 1 or 2, characterized in that the aroma-providing substance is present in an amount effective to impart a catty-sulfury, fruity, roasty, odor character to increase the freshly brewed coffee organoleptic properties of the food or beverage.
4. Use according to any preceding claim in which the aroma-providing substance is used in combination with 4-methoxy-2-methylbutan-2-thiol and/or with one or more of the compounds 4-mercapto-4-methyl-2-pentanone, methional, and 4-mercapto-4-methylbutyl formate.
5. Use according to claim 4, characterized in that the one or more of the sulfur compounds is present in an amount effective to impart a fruity, blackcurrent-sulfury, odor character to increase the freshly brewed coffee organoleptic properties of the food or beverage.
6. A method for increasing the organoleptic properties of a coffee flavor provided in a food or beverage which comprises providing a food or beverage and adding or incorporating at least one aroma-providing substance in the food or beverage in an amount sufficient to increase the coffee flavor thereof, characterized in that the

aroma-providing substance is a straight chain C₄ -C₅ mercapto alkanone or a combination of two or more thereof.

7. A food or beverage that comprises a consumable component and at least one aroma-providing substance in an amount sufficient to increase the organoleptic properties of coffee flavor in the food or beverage, characterized in that the aroma-providing substance is a mixture of two or more straight chain C₄ -C₅ mercapto alkanones.

8. A food or beverage according to claim 7, characterized in that the aroma-providing substance is a mixture of two or more of 3-mercapto-2-butanone, 2-mercapto-3-pentanone and 3-mercapto-2-pentanone.

9. A food or beverage according to claim 7 or 8, characterized in that it contains a mixture of the aroma-providing substance with 4-methoxy-2-methylbutan-2-thiol and/or with one or more of the compounds 4-mercapto-4-methyl-2-pentanone, methional, and 4-mercapto-4-methylbutyl formate.

10. A food or beverage according to any of claims 7 to 9, characterized in that the consumable component comprises a reconstitutable beverage, ready-to-drink beverage, alcoholic beverage, dough-based product, frozen confectionery product, chocolate or analogue thereof, cereal, or a spreadable dairy product or dairy substitute, or any mixture thereof.